CLAIMS

1. A flat bed platesetter system (1) for imaging radiant energy onto a printing plate (28), the system comprising:
   (a) drive means (60) for moving the printing plate (28) in a direction of movement (28) over stationary supporting elements (6);
   (b) at least one low inertia element (66) effectively connecting the printing plate (28) and the drive means (60); and
   (c) an optical head (32) being movably mounted on a stationary bridge (20) extending across the direction of movement (5) of the printing plate (28) and being provided for emitting radiant energy onto the printing plate (28).

2. A flat bed platesetter system (1) for imaging radiant energy onto a printing plate (28), the system comprising:
   (a) an optical head (32) being movably mounted on a stationary bridge (20) extending across a direction of movement (5) of the printing plate (28); and
   (b) a radiant energy emitting source (39) being provided at or in the optical head (32) for emitting radiant energy onto the printing plate (28).

3. A flat bed platesetter system (1) for imaging radiant energy onto a printing plate (28), the system comprising:
   (a) drive means (60) for moving the printing plate (28) in a direction of movement (5);
   (b) support means supporting the flat bed platesetter system (1) in a downwardly inclined manner with respect to the direction of movement (5) of the printing plate (28); and
   (c) optionally a storing and delivery system for a plurality of printing plates (28) having a support and delivery area which is downwardly inclined or inclinable in order to feed a printing plate (28) by means of the gravitational force onto a support area (8) of the flat bed platesetter.

4. A flat bed platesetter system (1) for imaging radiant energy onto a printing plate (28), the system comprising:
   (a) drive means (60) for moving the printing plate (28) in a direction of movement (5);
   (b) an optical head (32) being movably mounted on a stationary bridge (20) extending across the direction of movement (5) of the printing plate (28) and being provided for emitting radiant energy onto the printing plate (28); and
   (c) printing plate positioning means for bringing the printing plate (28) into a defined and precisely centred position onto a support area prior to imaging, wherein a first positioning element (57) is provided at a first lateral side, second and third positioning elements (55, 55') are provided at the opposite second lateral side, and at least a fourth positioning element (59, 59') is provided at a downstream end of the support area (8).

5. A flat bed platesetter system (1) for imaging radiant energy onto a printing plate (28), the system comprising:
   (a) a support area (8) movably supporting the printing plate (28) in a direction of movement (5);
   (b) an optical head (32) being movably mounted on a stationary bridge (20) extending across the direction of movement (5) of the printing plate (28) and being provided for emitting radiant energy onto the printing plate (28); and
   (c) a drive assembly effectively connecting the printing plate (28) and drive means (60), the drive assembly including:
      - a carriage member (66) carrying the printing plate (28) and being optionally mounted on at least one bearing (64, 74);
      - an electric linear motor (70, 72) driving the carriage member (66); and
      - an encoding system (88) for properly defining the position of the carriage member (60) along its path of movement (5).

6. A flat bed platesetter system (1) for imaging radiant energy onto a printing plate (28), the system comprising:
   (a) drive means (60) for moving the printing plate (28) in a direction of movement (5); and
   (b) a carriage member (66) effectively connecting the printing plate (28) and the drive means (60), wherein the carriage member (60) is provided in a centre position of a support area (8) supporting the printing plate (28).

7. A flat bed platesetter sytem (1) for imaging radiant energy on a printing plate (28), the system comprising:
   (a) an optical head (32) being movably mounted on a stationary bridge (20) extending across a direction of movement (5) of the printing plate (28); and
   (b) drive means (60) for moving the printing plate (28) in said direction of movement (5), wherein said drive means (60) is provided with at least one radiation intensity detector (80) and/or at least one detector (92, 94) at its tail end and/or its front end.

8. A flat bed platesitter system (1) for imaging radiant energy on a printing plate (28), the system comprising:
   (a) an optical head (32) being movably mounted on a stationary bridge (20) extending across a direction of movement (5) of said printing plate (28), wherein substantially all electronic, optical, electrical and mechanical components of said optical head (132) are located in a closed box-like container made of rigid and light material, and wherein emerging from said box-like container a lens (39), an edge detector (150), roller bearings (124), a moving part (137, 138) of a linear motor, an encoder (140) and connectors (153 to 156) are provided all on one side of at least one supporting rail (120) and all connecting conduits are provided on the other

side of said container to balance the weight of the optical head (32) properly.

9. A flat bed platesetter system (1) according to a combination of any of claims 1 to 8.

10. The system of any of claims 1 to 9, further comprising bearing means (18, 18') for movably supporting the printing plate (28) in the direction of movement (5).

11. The system of any of claims 1 to 10, wherein the printing plate (28) comprises a thermosensitive or photosensitive material.

12. The system of any of claims 1 to 11, wherein the head (32) comprises a spatial modulator being illuminated by at least one laser emitter and an optic forming the image of the modulator onto the printing plate level.

13. The system of claim 12, wherein the head (32) comprises the laser emitters.

14. The system of any of claims 1 to 13, wherein the drive means (60) is a carriage including the longitudinally moving element (72) of a linear motor (70).

15. The system of any of claims 1 to 14, wherein the drive means (60) is supportingly guided by at least one element (74).

16. The system of any of claims 1 to 15, wherein the carriage comprises at least one vacuum gripper (66) holding the printing plate (28).

17. The system of any of claims 1 to 16, wherein the carriage member (60) is located in the middle of the width of the flat bed.

18. The system of any of claims 1 to 17, being arranged inclined in the direction of movement (5) of the printing plate (28).

19. The system of any of claims 1 to 18, further comprising printing plate positioning means (55, 57, 59) for bringing the printing plate (28) into a defined and precisely centred position prior to imaging.

20. The system of claim 19, wherein the printing plate positioning means comprise at least one positioning element (55, 57) provided respectively laterally of a support area (8) and at least one positioning element (59) provided at an downstream end of the support area (8).

21. The system of claim 20, wherein a first positioning element (57) is provided at a first lateral side, second and third positioning elements (55, 55') are provided at the other, second lateral side, and a fourth positioning element (59) is provided at the downstream end of the support area (8).

22. The system of claim 20 or 21, wherein at least one of the positioning elements (55, 57, 59) is movable.

23. The system of any of claims 1 to 22, further comprising an encoding system (88) for properly defining the position of the carriage member (66) along its path of movement (5).

24. The system of any of claims 1 to 23, further comprising printing plate squaring means (59, 59') to position plate (28) at a defined longitudinal position (103) prior to imaging.

25. The system of claim 24, in which the squaring means comprises two movable elements (59, 59').

26. The system of claim 24 or 25, in which the plate is firmly abutted against the positioning elements (59, 59') by friction pushing mechanism (101).

27. The system of any of claims 1 to 26, in which low-friction elements (18, 48) are arranged to form a supporting surface extending the length of the platesetter (1).

28. The system of claim 27, wherein the supporting surface is divided into three longitudinal supporting zones in the direction of movement (5): a loading zone (8) to receive plates to be imaged, an imaging zone (10) where plates are subjected to radiant energy and an ejection zone (12) to receive the imaged plates.

29. The system of claim 28, wherein the loading zone (8) comprises arrays of parallel, longitudinally aligned roller-bearing channels (6, 6', 6") to receive and support plates (28).

30. The system of claim 29, in which said array is disposed on each side of the path (34) of the drive means (60).

31. The system of claim 29 or 30, in which one (6") of the roller-bearing channels (6, 6') is movable (110).

32. The system of any of claims 28 to 31, in which the supporting zone (10) includes rows of precision bearings (48) inserted in solid plates (24, 24').

33. The system of claim 32, in which rows of pressure bearings (36) maintain the plate (28) against rows of precision bearings (48).

34. The system of claim 33, wherein the pressure bearings (50, 50') are offset in relation with corresponding precision bearings (48, 48') to firmly maintain the plate (41) in the focal plane of the imaging lens (39).

35. A system of any of claims 1 to 34, wherein the drive means (60) is provided with a radiation intensity detector (80).

36. The system of any of claims 1 to 35, wherein the drive means (60) is provided with a detector (94) at its front end to detect the presence of a plate located too close on its track.

37. The system of any of claims 1 to 36, wherein the drive means (60) comprises a detector (92) at its tail end to detect the presence of a plate too close on its return trip home.

38. The system of any of claims 1 to 37, wherein the drive means (60) has a base (78) located under the supporting bed with sliding elements (74, 76) and a protruding section carrying suction cups (66) at the level of the supporting plate area.

39. The system of any of claims 1 to 38, wherein substantially all electronic, optical, electrical and mechanical components of the optical head (32) are located in and/or at a closed box-like container made of rigid and light material.

40. The system of claim 39, wherein a lens (39), an edge detector (52), roller bearings (124), a moving part (137, 138) of a linear motor, an encoder (140) and connectors (132, 153 to 156) are emerging from this box all on one side of at least one supporting rail (120), while all connecting conduits are on the other side to balance the weight of the optical head (32) properly.

41. The system of claim 40, wherein the optical head (32) is attached to the linear motor at its center of gravity.

42. A system for imaging radiant energy onto a printing plate, the system comprising:
    a) at least two flat bed platesetter systems;
    b) a transport assembly including a feed chain (A), an exit chain (D) and at least two branch chains (B, C) located between the feed chain (A) and the exit chain (D), wherein each of the flat bed platesetter systems is located in one of the branch chains (B, C).

43. The system of claim 42, wherein the flat bed platesetter systems are flat bed platesetter systems according to any of claims 1 to 41.

44. The system of claim 42 or 43, wherein the branch chains (B, C) comprise different types and/or numbers of flat bed platesetter systems.

45. The system of any of claims 42 to 44, wherein the transport assembly further comprises at least one loader (202), stripper (204), plate processor (226, 226'), bender (233) and/or stocker (234).

46. Method for imaging a printing plate (28) with radiant energy in a flat bed platesetter, particularly according to a system of any of claims 1 to 45, comprising the steps of:
    (a) providing a printing plate (28) on a support area (8) of the flat bed platesetter;
    (b) positioning the printing plate (28) on the support area (8);
    (c) moving the printing plate (28) in a first direction (5); and
    (d) moving a radiant energy emitting head (32) in a second direction substantially perpendicular to the first direction (5) in order to provide an image on the printing plate (28).